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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/762,951	01/21/2004	Chee Keong Chong	70030732-1	5978

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EXAMINER

MONBLEAU, DAVIENNE N

ART UNIT	PAPER NUMBER
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2878

DATE MAILED: 12/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/762,951

Applicant(s)

CHONG ET AL.

Examiner

Davienne Monbleau

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 August 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

The amendment filed on 11/18/05 has been entered. Claims 1 and 10 have been amended. Claims 1-19 are pending.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakajima et al. (U.S. 5,428,217) in view of Lewis (U.S. 5,650,613).

Regarding Claim 1, *Nakajima* teaches in Figure 21 an optical encoder disk comprising a disk (1001), a first region (1101) on said disk (1001), wherein said first region (1101) increases continuously in size in a radial direction from a minimum at a first angular position to a maximum that is 360 degrees from said first angular position, and a second region on said disk

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(1001) adjacent to said first region (1101) wherein one said first and second regions allows a greater amount of light to be transmitted therethrough than the other of said first and second regions. *Nakajima* does not teach that the first region is defined by a circular first boundary and a second boundary that is continuous from said minimum to said maximum. *Lewis* teaches in Figure 3 an encoder disc (26) with a spiral slit (35) that increases continuously in a radial direction and is defined by a circular first boundary and a second boundary that is continuous from said minimum to maximum. It would have been obvious to one of ordinary skill in the art at the time of the invention to have the first region in *Nakajima* defined by a particular boundary, such as in *Lewis*, to improve the resolution of the encoder.

Regarding Claim 10, *Nakajima* teaches in Figures 20 and 21 an optical encoder comprising a light source (1003), a light-sensitive detector (1006), and a code disk (1001) positioned between said light source (1003) and said detector (1006), said code disk (1001) comprising a first region (1101) and a second region adjacent to said first region (1101), wherein said first region (1101) increases continuously in size in proportion to angular disk position over a 360-degree arc, wherein one of said first and second regions allows light to be transmitted to said detector (1006) and the other of said first and second regions prevents light from being transmitted to said detector (1006), and wherein movement of said encoder disk (1001) relative to said detector (1006) exposes a different amount of said detector (1006) to light. *Nakajima* does not teach that the first region is defined by a circular first boundary and a second boundary that is continuous from said minimum to said maximum. *Lewis* teaches in Figure 3 an encoder disc (26) with a spiral slit (35) that increases continuously in a radial direction and is defined by a circular first boundary and a second boundary that is continuous from said minimum to

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maximum. It would have been obvious to one of ordinary skill in the art at the time of the invention to have the first region in *Nakajima* defined by a particular boundary, such as in *Lewis*, to improve the resolution of the encoder.

Regarding Claims 2 and 11, *Nakajima* teaches in Figure 21 that the second region encompasses said first region (1101).

Regarding Claims 3 and 13, *Nakajima* teaches in Figure 21 a circular-shaped third region encompassed by said first region (1101), wherein one of said first and third regions allows a greater amount of light to be transmitted therethrough than the other of said first and third regions.

Regarding Claims 4 and 14, *Nakajima* teaches in Figure 21 a ring-shaped fourth region (1001) encompassing said second region, wherein one of said second and fourth regions allows a greater amount of light to be transmitted therethrough than the other of said second and fourth regions.

Regarding Claims 5-8 and 15-18, *Nagajima* teaches in Figure 21 an encoder disk with a plurality of regions, but does not teach a fifth, sixth, and seventh region. It would have been obvious, however, to one of ordinary skill in the art at the time of the invention to use additional code regions in *Nagajima* to improve the precision and accuracy of the position detection. Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention to choose particular relative structural relationship between the plurality of regions in increase the number of distinct measurements, thus improving the precision and accuracy of the position detection.

Regarding Claim 9, *Nakajima* teaches in Figure 20 that light (source 1003) transmitted through said disk (1001) is received at a light-sensitive device (1006), wherein said light-sensitive device (1006) generates an output corresponding to an amount of said light transmitted through said disk (1001).

Regarding Claim 12, *Nagajima* teaches in Figure 20 an electronic circuit (1007) coupled to said detector (1006), said electronic circuit (1007) converting an output of said detector (1006) into a signal. *Nagajima* does not teach that said signal is digital. It would have been obvious, however, to one of ordinary skill in the art at the time of the invention to convert the signal into a digital signal to use a particular type of user interface that requires digital readings.

Regarding Claim 19, *Nagajima* teaches in Figures 3 and 29 an optical encoder disk comprising a plurality of photodetectors, wherein one photodetector corresponds to each circular pattern.

Response to Arguments

Applicant's arguments filed 11/18/05 have been fully considered but they are not persuasive. In particular, Applicant argues:

- A. *Nagajima* does not teach a first region that increases continuously in size.
- B. Incorporation of the fifth, sixth, and seventh regions would not have been obvious to one of ordinary skill in the art.

Regarding argument A, the Examiner maintains that the first region in *Nagajima* continuously increases over the span of the 360-degrees of the disc. Nonetheless, in light of Applicant's amendment to further define the first region, the Examiner incorporated *Lewis* into

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the rejection. *Lewis* teaches (Figure 3) that a region (34) can continuously increase over the span of the 360-degrees of the disc with completely smooth boundaries, which would improve the resolution of the detection.

Regarding argument B, the fact that the Applicant uses the additional regions for a different purpose does not alter the conclusion that its use in a prior art device would be prima facie obvious from the purpose disclosed in the reference. Thus, the Examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the invention to use additional code regions in *Nagajima* to improve the precision and accuracy of the position detection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Davienne Monbleau whose telephone number is 571-272-1945.

The examiner can normally be reached on Monday through Friday 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 571-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


DNM


Stephane B. Allen
Primary Examiner